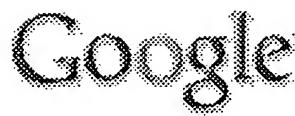


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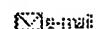
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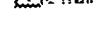
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Computers, IEEE Transactions on
Volume 54, Issue 3, Mar 2005 Page(s):340 - 346
Digital Object Identifier 10.1109/TC.2005.55[AbstractPlus](#) | Full Text: [PDF\(280 KB\)](#) [IEEE JNL](#)**IEEE CNF** IEEE Conference Proceeding 2. **Worst cases and lattice reduction**Stehle, D.; Lefevre, L.; Zimmermann, P.;
Computer Arithmetic, 2003. Proceedings. 16th IEEE Symposium on
15-18 June 2003 Page(s):142 - 147
Digital Object Identifier 10.1109/ARITH.2003.1207672[AbstractPlus](#) | Full Text: [PDF\(434 KB\)](#) [IEEE CNF](#)**IEEE CNF** IEE Conference Proceeding**IEEE STD** IEEE Standard[View Selected Items](#)[Help](#) [Contact Us](#) [Privacy &](#)

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- Capitalize proper nouns to search for specific people, places, or products.

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"museum of natural history" "museum of modern art"

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- Enclose a phrase in double quotes to search for that exact phrase.

"museum of natural history" "museum of modern art"

- Narrow your searches by using a **+** if a search term must appear on a page.

museum +art

- Exclude pages by using a **-** if a search term must not appear on a page.

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Relevance scale **1 System architectures for computer music** John W. GordonJune 1985 **ACM Computing Surveys (CSUR)**, Volume 17 Issue 2**Publisher:** ACM PressFull text available:  pdf(4.61 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Computer music is a relatively new field. While a large proportion of the public is aware of computer music in one form or another, there seems to be a need for a better understanding of its capabilities and limitations in terms of synthesis, performance, and recording hardware. This article addresses that need by surveying and discussing the architecture of existing computer music systems. System requirements vary according to what the system will be used for. Common uses for co ...

2 Fast floating-point processing in Common Lisp Richard J. Fateman, Kevin A. Broughan, Diane K. Willcock, Duane RettigMarch 1995 **ACM Transactions on Mathematical Software (TOMS)**, Volume 21 Issue 1**Publisher:** ACM PressFull text available:  pdf(2.58 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Lisp, one of the oldest higher-level programming languages, has rarely been used for fast numerical (floating-point) computation. We explore the benefits of Common Lisp, an emerging new language standard with some excellent implementations, for numerical computation. We compare it to Fortran in terms of the speed of efficiency of generated code, as well as the structure and convenience of the language. There are a surprising number of advantages to Lisp, especially in cases where a mixture ...

Keywords: C programming language, Common Lisp, Fortran, Lisp, compiler optimization, floating-point arithmetic, numerical algorithms, symbolic computation

3 Survey of formula manipulation Jean E. SammetAugust 1966 **Communications of the ACM**, Volume 9 Issue 8**Publisher:** ACM PressFull text available:  pdf(1.65 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

The field of formula manipulation is surveyed, with particular attention to the specific capabilities of differentiation, integration and the supporting capabilities of simplification, displays and input/output editing, and precision arithmetic. General systems—both batch and online—are described. Finally, some programs to solve specific applications are discussed.

4 Numerical computations: its nature and research directions



J. R. Rice, C. W. Gear, J. Ortega, B. Parlett, M. Schultz, L. F. Shampine, P. Wolfe, J. F. Traub
February 1979 **ACM SIGNUM Newsletter**, Volume 14 Issue si-1

Publisher: ACM Press

Full text available: pdf(4.43 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

This report on research in numerical computation is part of the Computer Science and Engineering Research Study (COSERS) which is aimed at technically educated people outside the Computer Science field. This goal led the panel to face many difficult choices between precise, but excessively technical, descriptions and looser, but more accessible expositions. The panel hopes that all readers will keep this in mind.

5 International symposium on symbolic and algebraic computation poster abstracts



2003

Olga Caprotti

September 2003 **ACM SIGSAM Bulletin**, Volume 37 Issue 3

Publisher: ACM Press

Full text available: pdf(1.73 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

ISSAC 2003 was held on July 3-6, 2003 at Drexel University in Philadelphia, USA. Below are the abstracts of posters that were accepted and presented at the conference. The *best poster award* committee, consisting of J. Davenport, D. Jeffrey, M. Monagan, T. Shaska, T. Sturm, N. Takayama, E. Volcheck and members of the poster committee, assigned the prize to B. Jüttler, J. Schicho, and M. Shalaby for their poster *C¹ Implicitization of Planar Curves*. All posters ...

6 Abstracts—nuclear reactor codes



Virginia Nather, Ward Sangren

January 1959 **Communications of the ACM**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: pdf(3.51 MB) Additional Information: [full citation](#)

7 A test package for Sturm-Liouville solvers



J. D. Pryce

March 1999 **ACM Transactions on Mathematical Software (TOMS)**, Volume 25 Issue 1

Publisher: ACM Press

Full text available: pdf(212.42 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The author and colleagues have produced a collection of 60 test problems which offer a realistic performance test of the currently available automatic codes for eigenvalues of the classical Sturm-Liouville problem. We describe a Fortran implementation and the considerations that went into its design. A novel feature is that (almost) all the code defining one problem is textually contiguous in the Fortran text, unlike for example the DETEST package for ODE initial-value solvers where the def ...

Keywords: Sturm-Liouville problem, test-problem collection, testing software

8 Algorithm 840: computation of grid points, quadrature weights and derivatives for spectral element methods using prolate spheroidal wave functions--prolate elements

John P. Boyd

March 2005 **ACM Transactions on Mathematical Software (TOMS)**, Volume 31 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(291.55 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

High order domain decomposition methods using a basis of Legendre polynomials, known variously as "spectral elements" or " p -type finite elements," have become very popular. Recent studies suggest that accuracy and efficiency can be improved by replacing Legendre polynomials by prolate spheroidal wave functions of zeroth order. In this article, we explain the practicalities of computing all the numbers needed to switch bases: the grid points x_j

Keywords: p -finite elements, Prolate spheroidal wavefunctions, prolate element method, spectral elements

9 Certification of algorithm 22: Riccati-Bessel functions of first and second kind

Thomas Bray

July 1970 **Communications of the ACM**, Volume 13 Issue 7

Publisher: ACM Press

Full text available:  [pdf\(428.60 KB\)](#) Additional Information: [full citation](#), [references](#)

Keywords: Bessel functions of fractional order, Riccati-Bessel functions, spherical Bessel functions

10 Symbolic computation of divided differences

W. Kahan, R. J. Fateman

June 1999 **ACM SIGSAM Bulletin**, Volume 33 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(1.16 MB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Divided differences are enormously useful in developing stable and accurate numerical formulas. For example, programs to compute $f(x)-f(y)$ as might occur in integration, can be notoriously inaccurate. Such problems can be cured by approaching these computations through divided difference formulations. This paper provides a guide to divided difference theory and practice, with a special eye toward the needs of computer algebra systems that should be programmed to deal ...

11 Processing power on the IBM personal computer

John K. Gotwals

December 1983 **Proceedings of the 1983 ACM SIGSMALL symposium on Personal and small computers**

Publisher: ACM Press

Full text available:  [pdf\(455.96 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In the last 20 years there has been nearly a six-order-of-magnitude increase in computing power, and it is predicted that another five-to-six-orders-of-magnitude increase will occur by the year 2000 [1]. Although supercomputers such as the Cray-1 and Cyber 205 can perform certain vector operations with burst rates of up to 100 million floating-point operations per second (Mflops) [2], it is remarkable that a popular and affordable personal computer is only three-orders-of-magnitude slower. ...

12 Remarks on Algorithm 332: Jacobi polynomials: Algorithm 344: student's t-distribution: Algorithm 351: modified Romberg quadrature: Algorithm 359: factorial analysis of variance

Arthur H. J. Sale

July 1970 **Communications of the ACM**, Volume 13 Issue 7

Publisher: ACM Press

Full text available:  pdf(428.60 KB) Additional Information: [full citation](#), [references](#)



Keywords: Fortran standards

13 Polynomial real root isolation using approximate arithmetic

 J. R. Johnson, Werner Krandick
July 1997 **Proceedings of the 1997 international symposium on Symbolic and algebraic computation**

Publisher: ACM Press

Full text available:  pdf(998.05 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



14 Bibliography on Numerical Analysis

 Alston S. Householder
April 1956 **Journal of the ACM (JACM)**, Volume 3 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.12 MB) Additional Information: [full citation](#), [references](#), [index terms](#)



15 Efficient and accurate B-rep generation of low degree sculptured solids using exact arithmetic

 John Keyser, Shankar Krishnan, Dinesh Manocha
May 1997 **Proceedings of the fourth ACM symposium on Solid modeling and applications**

Publisher: ACM Press

Full text available:  pdf(1.69 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



16 PRECISE: efficient multiprecision evaluation of algebraic roots and predicates for reliable geometric computation

 Shankar Krishnan, Mark Foskey, Tim Culver, John Keyser, Dinesh Manocha
June 2001 **Proceedings of the seventeenth annual symposium on Computational geometry**

Publisher: ACM Press

Full text available:  pdf(631.46 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



Many geometric problems like generalized Voronoi diagrams, medial axis computations and boundary evaluation involve computation and manipulation of non-linear algebraic primitives like curves and surfaces. The algorithms designed for these problems make decisions based on signs of geometric predicates or on the roots of polynomials characterizing the problem. The reliability of the algorithm depends on the accurate evaluation of these signs and roots. In this paper, we present a {\em naive} ...

17 Level set and PDE methods for computer graphics



David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker
August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: [pdf\(17.07 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

18 Random variate generation for multivariate unimodal densities



Luc Devroye
October 1997 **ACM Transactions on Modeling and Computer Simulation (TOMACS), Volume 7 Issue 4**

Publisher: ACM Press

Full text available: [pdf\(303.84 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

A probability density on a finite-dimensional Euclidean space is orthounimodal with a given mode if within each orthant (quadrant) defined by the mode, the density is a monotone function of each of its arguments individually. Up to a linear transformation, most of the commonly used random vectors possess orthounimodal densities. To generate a random vector from a given orthounimodal density, several general-purpose algorithms are presented; and an experimental performance evaluation illustr ...

Keywords: multivariate densities, nonparametric classes, random variate generation, unimodality

19 Algorithm 385: Exponential integral Ei(x)



Kathleen A. Paciorek
July 1970 **Communications of the ACM, Volume 13 Issue 7**

Publisher: ACM Press

Full text available: [pdf\(428.59 KB\)](#) Additional Information: [full citation](#), [references](#)

Keywords: exponential integral, rational Chebyshev approximation, special functions

20 Certification of algorithm 385: Exponential integral Ei (x)



Edward W. Ng
July 1970 **Communications of the ACM, Volume 13 Issue 7**

Publisher: ACM Press

Full text available: [pdf\(428.59 KB\)](#) Additional Information: [full citation](#), [references](#)

Keywords: exponential integral, rational Chebyshev approximation, special functions

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